

## CHRONIC TRANSPLANT REJECTION: PROBLEMS, DISCOVERIES, SOLUTIONS

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Organ transplantation has become an increasingly important remedy in helping extend the lives of patients with organ failures or deficiencies. Although the survival rates of organ recipients have dramatically increased in the short term (1-5 years), long-term (5+ years) survival rates have not improved significantly. Additionally, increasingly unhealthy lifestyles have contributed to a dramatic increase in the need for organ transplants, while organ supply has only slightly increased, resulting in a constantly increasing gap between organ demand and organ supply. Dr. Raymond Johnson, an IU Health Physician, discovered a new T cell subset that is resistant to medications routinely used to prevent transplant rejection. This discovery is important because it can be used to develop mechanism-specific diagnostic blood tests for chronic rejection and, potentially, new drugs to treat chronic transplant rejection. However, innovations developed in faculty labs often face multiple hurdles in reaching the market place. As participants in the Innovation-to-Technology Central (ITEC) program, our unique multidisciplinary team of students investigated Dr. Raymond Johnson's discovery by conducting literature research and expert interviews on organ transplantation and rejection and pharmaceutical drugs used in preventing acute transplant rejection. Through our research and our interviews, we were able to further document the dire need for methods for increasing survival rates of transplanted organs. Most importantly, we have conducted preliminary market research and developed several commercialization strategy recommendations based on comparable innovation analysis and precedent biotechnology start-up strategies. We anticipate that our research will provide Dr. Johnson with new information and perspectives to help seek venture capitalists to invest in his research, which holds the promise to change the lives of thousands of transplant recipients each year.

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